**SECTION 213 – IRRIGATION SYSTEMS**

**DESCRIPTION**

**213.01.01 GENERAL**

***delete paragraph “a” of this subsection and replace with the following:***

1. This work shall consist of furnishing and installing the irrigation system including, but not limited to, the mainline piping, the lateral piping, sleeves, valves and drip irrigation systems to the lines and grades as shown on the project drawings or as established by the ENGINEER and accepted landscaping practices.

***ADD THE FOLLOWING TO THIS SECTION:***

**213.01.70 IRRIGATION SYSTEM PERFORMANCE REQUIREMENTS**

1. The irrigation design is diagrammatic only; the CONTRACTOR shall make necessary modifications to avoid plantings and obstructions such as signs, utilities, and light standards and to meet the specifications herein. No additional compensation will be made to the CONTRACTOR for modifications required to meet the requirements of these specifications. It is the CONTRACTOR’S responsibility to notify the ENGINEER immediately if the significant modifications are required to the project drawings.

**213.01.71 FLUSHING AND TESTING**

1. Notify the ENGINEER three (3) days in advance of testing. Furnish clean, clear water, pumps, labor, fittings, and equipment necessary to conduct tests or re-tests.
2. The pressure piping shall have a minimum working pressure of 150 psi, and the circuit and drain piping shall have a minimum working pressure of 100 psi.
3. Pipelines jointed with rubber gaskets or threaded connections may be subjected to a pressure test at any time after partial completion of backfill. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure at least 24 hours before testing.
4. Subsections of mainline pipe may be tested independently, subject to the review of the Construction Project Representative.
5. All mainline pipes shall be flushed completely of foreign particles before placing section control valves, quick-coupler valves and hose bibs. After flushing and when valves are in place, all mainline pipes shall be tested.
6. Hydrostatic Pressure Test
7. Subject pressure piping less than 3-inches in diameter to a hydrostatic pressure test.
8. Maintain a pressure of 140 psi for two (2) hours. Leakage will be detected by visual inspection or by a drop in pressure of more than five (5) psi. Replace defective pipe, joint, valve or appurtenances. Repeat test until pipe passes. Pipe will pass if hydrostatic pressure holds for two (2) hours.
9. All joints showing leaks shall be cleaned, remade, and tested. Cement or caulking to seal leaks is prohibited.
10. Coverage Test
11. Activate each remote control valve in sequence. The ENGINEER will visually observe water applications and patterns. Adjust or move system components to correct deficiencies. Repeat test until system is acceptable to ENGINEER.
12. Signal Wire
13. Wire shall be tested for shorts in ground in accordance with manufacturer’s guidelines for acceptance. Replace defective wire, underground splices, or appurtenances. Repeat test until guidelines are met.

**213.01.72 SUBMITTALS**

1. The CONTRACTOR shall submit brochures, cut sheets or shop drawings for each accessory or fixture, and each item of hardware or equipment intended for use prior to ordering these items. Brochures shall contain pertinent dimension, finish, installation and maintenance data necessary for the proper placement or use of each item. The approval of a brochure does not constitute final approval of the item. The ENGINEER reserves the right to reject any work, material or item that does not conform to the requirements of the plans or specifications as set forth herein even though the pertinent brochure may have been approved.
2. Product Data: Pressure rating, rated capacity, settings, and electrical data of selected models for the following:
3. Backflow preventers, including test equipment.
4. Pressure regulators.
5. Valves, including general duty, underground, manual and automatic control, and quick coupler types, and valve boxes.
6. Sprinklers, including emitters, drip tubes, and devices.
7. Controls, including controller wiring diagrams.
8. Wiring.
9. Record Drawings: Record actual locations of all concealed components, piping systems, conduit and wiring.
10. Maintenance data for inclusion in Operating and Maintenance Manual.
11. Provide instructions for operation and maintenance of the system and controls, seasonal activation and shutdown, and manufacturer's parts catalog.
12. Provide schedule indicating length of time each valve is required to be open to provide a determined amount of water.

**213.01.73 WARRANTY AND MAINTENANCE**

1. Warranty all parts and labor for a period of one year from the date of substantial completion.
2. Repair damage to landscape due to settling of trenches.
3. Fill and repair depressions.
4. Repair damage to premises caused by defective components.
5. Make repairs within seven days of site inspection or notification by OWNER.
6. One year maintenance:
	* + 1. The OWNER is responsible for programming all automatic irrigation controllers. The CONTRACTOR will coordinate monthly inspection and review of irrigation programming with the OWNER’s designated representative.
			2. The OWNER shall repair all automatic controller clocks when they malfunction, and pay for all necessary materials required to complete such tasks.
			3. The CONTRACTOR shall repair any damaged sprinkler heads, drip irrigation components, nozzles, swing arms, fittings, risers, lateral lines and quick couplers, resulting from routine wear, defective parts, mower damage, etc., and shall routinely clean out sprinkler heads, drip irrigation components and lines to keep them in good operating condition at all times. All labor shall be at no cost to the OWNER. All necessary materials for repairs, including tools, shall be the responsibility of the CONTRACTOR.
			4. Repairs to the irrigation system mainline pipes, solenoids, valve wiring and valves resulting from normal wear, vandalism or damage by other means, with the exception of damage incurred due to negligence by the OWNER, shall be the responsibility of the CONTRACTOR.
			5. Irrigation water shall be carefully applied and in quantities required by the different plant species, time of the year, and other basic environmental factors. The effect of the watering program shall be checked once a week by the CONTRACTOR and any discrepancies reported to the OWNER’s designated representative.
			6. Automatic irrigation shall take place at night or early morning hours only.
			7. Watering shall be controlled to avoid excessive drainage on sidewalks, streets and play areas, creating a hazard and wasted water. Areas referred to as “slope” will require special attention due to severe grades and watering difficulties.
			8. Any areas that have manual watering systems must be watered as needed to keep plant material in healthy condition. Automatic irrigation controllers will be kept locked at all times. The OWNER or designated representative and assigned OWNER staff will have master keys to all controllers
			9. If irrigation system is inoperative for whatever reason, the CONTRACTOR **MUST** water the areas with manual sprinklers and hoses.
			10. The CONTRACTOR shall perform field observations and provide status reports to the OWNER’s designated representative. Specifically, the CONTRACTOR shall notify the OWNER in writing of the condition of the landscape area and irrigation system by station valve number and controller, as assigned by the designated representative. The irrigation system must be visually monitored a minimum of once a week to ensure the system operates at an optimum level of efficiency.
			11. Materials:
				1. All irrigation replacement parts and materials must be equal to or better than manufacturers’ original equipment, unless OWNER’s representative approves a substitute in writing.
				2. CONTRACTOR shall maintain an adequate inventory of medium and high usage stock items for repair of the irrigation system.
				3. CONTRACTOR shall implement repairs in accordance with manufacturer’s warranties.
				4. All materials are to be new and identical to existing materials, unless otherwise directed by the OWNER representative.
				5. The OWNER reserves the right to purchase materials directly and make available to the CONTRACTOR.
7. The contract documents govern replacement materials, labor, and workmanship identically as with new work. Make replacements at no additional cost to Owner.

**MATERIALS**

**213.02.02 PIPE AND FITTINGS**

***add the following to this subsection:***

1. Piping
2. Live main lines shall have a minimum cover of eighteen (24) inches (61 centimeters).
3. Other lines shall have a minimum cover of twelve (12) inches (30.6 centimeters) below finish grade.
4. All live mains located under pavement shall be placed in sleeves. Mainline and lateral pipes or section piping shall not be placed in the same trench.
5. Irrigation Piping
6. This item shall consist of supplying all materials, labor and incidentals to install all irrigation mains as shown on the project drawings or as directed by the ENGINEER. This item shall include trenching, backfill, bedding, fittings, thrust blocks and other incidentals for a complete job.
7. All piping and fittings sizes 3-inches and larger shall be Class 200 PVC quality pipe.
8. All piping and fittings sizes 2-1/2-inches and smaller shall be PVC Schedule 40 quality pipe.
9. Drip line header shall be PVC Schedule 40 quality pipe.
10. Sleeves will be required for all irrigation lines, which will be installed under sidewalks and drives as indicated on the project drawings. Sleeves shall be Schedule 40 PVC unless otherwise noted and shall be at the locations and sizes as shown on the project drawings or as directed by the ENGINEER. No additional compensation will be made to the CONTRACTOR for any sleeves. The sleeves shall be considered incidental to the irrigation pipe pay items.
	* 1. **CONTROL VALVES**

***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

1. Remote Control Valve Assembly: Manual control valves shall be straight or angle pattern globe valves of all brass or bronze construction with replaceable compression disks. Manual control valves shall be of the same size as the pipes on which they are placed unless otherwise indicated on the plans, and shall be provided with a union connection. Manual control valves shall be capable of withstanding a cold water working pressure of 200 psi.
2. Electric control valves shall be of the diaphragm type, normally closed, 24-volt, and 60-cycle. The valve solenoids shall operate with 18-30 volts of power. Solenoids shall be completely encapsulated for positive waterproofing. The valve body and bonnet shall be of plastic or nylon threaded type. If threaded type is used it shall be provided with a union connection. The time interval between opening and closing the valve shall not be less than five (5) seconds. The solenoid plunger shall be spring loaded so the valve may operate when installed in any position and shall be constructed of stainless steel with neoprene seat. Valve bonnet shall have a bleed screw for manual operation and a manual flow control adjustment. Electric control valves shall be capable of withstanding a non-shock cold water working pressure of 200 psi.
3. Valves shall have pressure regulation module to ensure optimum performance (PRS-D).
4. Pressure Regulators: Plastic housing with corrosion resistant internal parts, and capable of controlling outlet pressure to approximately 40 psi.
5. Strainer/Filter Units: Plastic housing with corrosion resistant internal parts and 200 mesh screens.
	* 1. **QUICK-COUPLER VALVES**

***delete paragraph “a” of this subsection and replace with the following:***

1. Quick-Coupler Valves
2. The quick-coupler valve shall be of brass or bronze construction. The valve shall be of two-piece construction with removable upper body. The valve body shall be designed with a single slot to receive a single slot coupler.
3. This item shall include all items necessary to install the quick couplers as shown on the project drawings. They shall be factory fabricated; two piece assembly, with non-potable purple cap. Include coupler water seal valve with ASME B1.20.7, ¾-11.5NH threads for garden hose on outlet; and operating key. Include vandal resistant, locking feature with matching key. Isolation valves for quick couplers are to be brass angle valves with tee handles.
	* 1. **VALVE BOXES**

***delete paragraph “a” of this subsection and replace with the following:***

1. Valve Boxes shall be Christy, Carson or approved equal, concrete, rectangular heavy duty valve box with cast iron lockable lids, use “Jumbo” size valve boxes for drip valve assemblies, all valves 1½” to 3”, and adjustable extensions of length required for depth of bury of valve. Valve boxes for drip valve assemblies are to be oversized so that the entire drip valve assembly is easily accessible and removable without disturbing the valve box. There will be no additional compensation made to the CONTRACTOR for the valve boxes. The valve boxes shall be considered incidental to the valve pay items.

***ADD THE FOLLOWING TO THIS SECTION:***

* + 1. **AUTOMATIC CONTROL SYSTEM**
1. Low voltage controller system, made for control of irrigation system automatic control valves. Controller operates on 120 volts a.c. building power system, provides 24 volts a.c. power to control valves, and includes stations for at least the number of control valves indicated.
2. Control Enclosures: Weatherproof enclosure with locking cover and two matching keys. Enclosure construction complies with NFPA 70 and NEMA 250, Type 4, and includes provisions for grounding.
3. Material: Stainless steel, sheet metal.
4. Mounting: Outside wall mounting.
5. Wiring: UL 493, solid copper conductor, insulated cable, suitable for direct burial.
6. Feeder Circuit Cables: Type UF, No. 12 AWG minimum, between building and controllers.
7. Low Voltage and Branch Circuits: Type UF, No. 14 AWG minimum, common wire, white color and No. 14 AWG minimum pilot wire, color other than white.
8. Splicing Materials: Water tight fittings as recommended by wire manufacturer.
9. Pressure Gauges: ASME B40.1, 4-1/2 inch dial, with dial range of two times system operating pressure and bottom outlet.

**CONSTRUCTION**

**213.03.02 EXCAVATION**

***delete paragraph “a” of this subsection and replace with the following:***

1. Trenches shall be of sufficient width to permit snaking of all plastic pipe not connected by rubber ring-type fittings. Pipe connected with rubber ring-type fittings shall not be snaked. The top 6 inches of planting soil, when such exists, shall be kept separate from subsoil and shall be replaced as the top layer when backfill is made. Trenches shall be excavated with vertical sides and provided with bracing and shoring to be placed as designated by the ENGINEER. Trenches in rock or like material shall be excavated four (4) inches below the required depth and shall be backfilled to required depth with sand or other suitable material free from rock or stones.

**213.03.04 PIPING**

***add the following to this subsection:***

1. This item shall consist of supplying all materials, labor and incidentals to install all irrigation lines as shown on the project drawings or as directed by the ENGINEER. This item shall include trenching, backfill, bedding, fittings, thrust blocks and other incidentals for a complete job.
2. Sleeves are required for all irrigation lines, which are installed under sidewalks and drives as indicated on the project drawings. Sleeves shall be Scheduled 40 PVC unless otherwise noted and shall be at the locations and sizes as shown on the project drawings or as directed by the ENGINEER. No additional compensation will be made to the CONTRACTOR for any sleeves. The sleeves shall be considered incidental to the irrigation pipe pay items.

**213.03.07 INSTALLATION**

***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

1. Where conduit is installed in an open trench, excavation and backfill shall conform to the provisions of Section 208, "Trench Excavation and Backfill." The conduit shall be laid in the trench to the lines and grades established by the ENGINEER. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of the conduit.
2. During backfilling operations, the sleeves shall be rigidly supported so that no movement of or damage to the sleeves or joints will result.
3. Where connection is made to existing supply lines, compression type fittings may be used.
4. Where supply lines or conduits are to be installed through existing paved areas, the sub-base, base, and paving removed shall be replaced with material of equal quality.
5. Where water lines run parallel to electrical lines, maintain a 3’-0” separation in all directions.
6. All pipe shall be cut straight and true. After cutting, the ends shall be reamed out to the full inside diameter of the pipe.
7. Foreign material shall be prevented from entering the irrigation system during installation. Immediately prior to assembly, all pipes, valves, and fittings and control tubes shall be cleaned.
8. All unattached ends of pipe, fittings, and valves shall be plugged or capped pending attachment of additional pipe or fittings. All lines shall be thoroughly flushed out prior to attachment of terminal fittings.
9. Before any portion of the pipeline is backfilled, water shall be turned into that portion of the line and maintained at full pressure for a period of not less than eight (8) consecutive hours after all air has been expelled from the line. Any leaks that develop in the portion of the system installed by the CONTRACTOR shall be repaired and all defective materials shall be replaced. The drip line header pipe shall be plugged or capped while making this test. The entire system shall then be checked for uniform and complete coverage after installing emitters.
10. All plastic irrigation pipe shall be installed and laid according to the manufacturer's instructions, and as directed by the ENGINEER. Before joints of PVC plastic pipe are made up, the plastic pipe fittings shall be exposed to the same temperature for a reasonable length of time. Pipe shall be cut with a fine-tooth hacksaw and any burrs shall be removed. The outside surface of the pipe and the inside surface of the fittings shall be cleaned and softened with an approved primer, using a dauber, brush top applicator, or paint brush about one-half the pipe diameter. A light second coat of primer shall be applied to the fitting socket. Primer shall not be allowed to run down the inside of the pipe.
11. The cement solution shall be applied to the pipe and fitting socket with an applicator having a width of approximately one-half the diameter of the pipe, using the proper cement for the size of pipe.
12. Apply a full, even layer of cement on the pipe equal to the depth of socket. Flow the cement on with the applicator; do not brush it out to a thin paint type layer. Apply a medium layer of cement to the fitting socket; avoid puddling cement in the socket. On bell end pipe do not coat beyond the socket depth or allow cement to run down in the pipe beyond the bell. Apply a second full even layer of cement on the pipe. Assemble the pipe and fitting without delay, making certain cement is wet. Use sufficient force to ensure that the pipe bottoms are in the fitting socket. Twist the pipe 1/8 to 1/4 turn as it is inserted. Hold the fitting and the pipe together until cement takes its initial set. After assembly, a joint shall have a ring or bead of cement completely around the junction of the pipe and fitting. If voids in this ring are present, sufficient cement was not applied and the joint will be considered defective. Using a rag, remove all the excess cement from the pipe and fitting including the ring or bead.
13. Avoid disturbing or moving the joint. Handle newly assembled joints carefully until initial set has taken place. Recommended setting time allowed before handling or moving is related to temperature, type of cement, and size of pipe, and shall be according to manufacturer's recommendations.
14. Old or thickened cement shall be discarded and replaced. The male pipe thread of all threaded connections on PVC plastic pipe shall be coated with a joint compound or tape suitable for use on plastic pipe.
15. Cement solution for flexible PVC shall be an approved type for joining flexible PVC to itself or to rigid PVC. All pipe shall be cut straight and true. After cutting, the ends shall be reamed out to the full inside diameter of the pipe. Polyvinyl chloride pipe trenches shall be partially backfilled between joints with small amounts of backfill material to prevent movement during the pressure test.

**213.03.12 AS-BUILT RECORD DRAWINGS**

***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

1. The CONTRACTOR shall provide and keep up to date a complete set of as-built drawings which shall be corrected daily to show changes in controller locations, piping locations and other deviations from the original irrigation design drawings as provided to him. All isolation valve locations shall be shown with actual measurements to reference points so they may be located easily in the field.
2. The CONTRACTOR will be required to record actual locations of all concealed components, piping systems, conduit and wiring. Show two reference dimensions to all concealed components. Record drawings must be kept current. Submit a copy of current record drawings along with application for payment. Payment will be held if record drawings are not current.
3. Upon completion of the work, the CONTRACTOR shall furnish the ENGINEER with a complete set of CAD generated as-built drawings showing the irrigation system as installed. This is the responsibility of the CONTRACTOR and shall not be construed to be the responsibility of any other party.

***ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:***

**213.03.70 GATE VALVES**

1. This item shall consist of supplying all materials, labor and incidentals to install all irrigation valves as shown on the project drawings or as directed by the ENGINEER.
2. Isolation Gate Valve Assembly
3. This item shall include all items necessary to install the Isolation Gate Valve Assembly as shown on the project drawings. This work shall include but not limited to the Valve, all materials and labor for the isolation gate valve, valve boxes, fittings, material and labor for a complete job. Refer to attached details of isolation gate valve. The entire valve assembly must work as a part of the automatic irrigation system.
4. Gate valves 2-1/2 inches and smaller shall be of the same size as the pipes on which they are placed unless otherwise indicated on the plans. Service rating for non-shock cold water shall be two hundred (200) psi. These valves shall be all bronze, split wedge type, with rising stem and union bonnet. Packing shall be Teflon impregnated asbestos and the valve shall be capable of being re-packed under pressure. Hand-wheels shall be malleable iron. Gate valves 2-1/2 inches and smaller shall be the threaded type and installed with a union on either side of the valve.

**213.03.71 CONTROL VALVES**

1. Remote Control Drip Valve Assembly
2. This item shall include all items necessary to install the remote control drip valve assemblies as shown on the project drawings. Each assembly shall consist of a ball valve, remote control valve, pressure regulator and filter.
3. The valves shall be normally closed, 24 VAC, 50/60 cycle solenoid actuated globe pattern with balanced pressure diaphragm design, pressure rating of 200 psi minimum. Constructed of heavy duty glass filled UV resistant nylon with stainless studs and flange nuts. Diaphragm to be nylon reinforced rubber and shall have pressure regulating module to assure optimum performance. Internal bleed manual open/close control. Manual flow control with brass stem.

**213.03.72 DRIP LATERAL FLUSH VALVE**

1. Flush valve installation shall include all materials and labor for a complete job. Materials shall include but are not limited to: Valve box (round), ball valve, Excalibur flex hose, PVC fittings, pipe and incidentals conforming to the project drawings.

**213.03.72 QUICK COUPLING VALVE ASSEMBLY**

1. The CONTRACTOR shall ensure valve box is at finish grade with clean washed gravel sump. Rebar or pipe support shall be securely attached with stainless steel clamps. Valve box shall be purple to indicate non-potable water. The top of the quick coupler hall be 2-4 inches below the valve box.

**METHOD OF MEASUREMENT**

**213.04.01 MEASUREMENT**

***ADD THE FOLLOWING TO THIS SUBSECTION:***

The quantity of DRIP IRRIGATION SYSTEM will be measured per lump sum.

The quantity of IRRIGATION LINE (1 INCH) will be measured per linear foot.

The quantity of PVC SLEEVE (2 INCH) will be measured per linear foot.

The quantity of IRRIGATION CONTROLLER will be measured per each.

The quantity of IRRIGATION LINE (1.5 INCH) will be measured per linear foot.

The quantity of PVC SLEEVE (3 INCH) will be measured per linear foot.

**METHOD OF PAYMENT**

**213.05.01 PAYMENT**

***ADD THE FOLLOWING TO THIS SUBSECTION:***

The accepted quantity of DRIP IRRIGATION SYSTEM will be paid for at the contract unit price of lump sum and shall conform to the requirements of subsection 213.05.01 of the Uniform Standard Specifications and shall include all materials, equipment, labor and disposal required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer. The above payment shall also include, installation of all components, sawcutting, trenching, excavation, bedding, pipe, sleeves, backfill, compaction, pressure regulators, wye strainers, filters, valves; flexible tubing; fittings, glue, cement, connectors, valve boxes; pea gravel, disposal of excess materials; fees, permits, and all incidentals required to construct a complete and operational irrigation system; necessary testing to insure the proper installation and operation of the irrigation system.

The accepted quantity of IRRIGATION LINE (1 INCH) will be paid for at the contract unit price of linear foot and shall conform to the requirements of subsection 213.05.01 of the Uniform Standard Specifications and shall include all materials, equipment, labor and disposal required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer. The above payment shall also include, installation of all components, sawcutting, trenching, excavation, bedding, pipe, sleeves, backfill, compaction, pressure regulators, wye strainers, filters, mainlines; lateral lines; valves; flexible tubing; fittings, glue, cement, connectors, valve boxes; pea gravel, disposal of excess materials; fees, permits, and all incidentals required to construct a complete and operational irrigation system; necessary testing to insure the proper installation and operation of the irrigation system.

The accepted quantity of PVC SLEEVE (2 INCH) will be paid for at the contract unit price of linear foot and shall conform to the requirements of subsection 213.05.01 of the Uniform Standard Specifications and shall include all materials, equipment, labor and disposal required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer. The above payment shall also include, installation of all components, sawcutting, trenching, excavation, bedding, pipe, sleeves, backfill, compaction, flexible tubing; fittings, glue, cement, connectors, pea gravel, disposal of excess materials; fees, permits, and all incidentals required to construct a complete and operational irrigation system; necessary testing to insure the proper installation and operation of the irrigation system.

The accepted quantity of IRRIGATION CONTROLLER will be paid for at the contract unit price of each and shall conform to the requirements of subsection 213.05.01 of the Uniform Standard Specifications and shall include all materials, equipment, labor and disposal required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer. The above payment shall also include, installation of all components, sawcutting, trenching, excavation, bedding, backfill, compaction, conduit, wiring, pressure regulators, glue, cement, connectors, emitters; concrete pads; pea gravel, disposal of excess materials; fees, permits, and all incidentals required to construct a complete and operational irrigation system; necessary testing to insure the proper installation and operation of the irrigation system.

The accepted quantity of IRRIGATION LINE (1.5 INCH) will be paid for at the contract unit price of linear foot and shall conform to the requirements of subsection 213.05.01 of the Uniform Standard Specifications and shall include all materials, equipment, labor and disposal required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer. The above payment shall also include, installation of all components, sawcutting, trenching, excavation, bedding, pipe, sleeves, backfill, compaction, pressure regulators, wye strainers, filters, mainlines; lateral lines; valves; flexible tubing; fittings, glue, cement, connectors, valve boxes; pea gravel, disposal of excess materials; fees, permits, and all incidentals required to construct a complete and operational irrigation system; necessary testing to insure the proper installation and operation of the irrigation system.

The accepted quantity of PVC SLEEVE (3 INCH) will be paid for at the contract unit price of linear foot and shall conform to the requirements of subsection 213.05.01 of the Uniform Standard Specifications and shall include all materials, equipment, labor and disposal required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer. The above payment shall also include, installation of all components, sawcutting, trenching, excavation, bedding, pipe, sleeves, backfill, compaction, flexible tubing; fittings, glue, cement, connectors, pea gravel, disposal of excess materials; fees, permits, and all incidentals required to construct a complete and operational irrigation system; necessary testing to insure the proper installation and operation of the irrigation system.

Payment will be made under:

|  |  |  |
| --- | --- | --- |
| **ITEM NO.** | **ITEM DESCRIPTION** | **UOM** |
| 213.0030 | DRIP IRRIGATION SYSTEM | LS |
| 213.0110 | IRRIGATION LINE (1 INCH) | LF |
| 213.0120 | PVC SLEEVE (2 INCH) | LF |
| 213.0180 | IRRIGATION CONTROLLER | EA |
| 213.0210 | IRRIGATION LINE (1.5 INCH) | LF |
| 213.0220 | PVC SLEEVE (3 INCH) | LF |
|  |  |  |

**END OF SECTION 213**